



Multi-State Standard Setting Report

Praxis Business Education (0101)

October 2009

Conducted by
Educational Testing Service
Princeton, New Jersey

Executive Summary

To support the decision-making process for state departments of education with regards to establishing passing scores, or cut scores, for the Praxis Business Education assessment, research staff from Educational Testing Service (ETS) designed and conducted two multi-state standard setting studies. The studies also collected content-related validity evidence to confirm the importance of the content specifications for entry-level Business Education teachers.

Recommended Cut Scores

The standard setting studies involved two expert panels, comprised of teachers, administrators and college faculty. The recommended cut scores for each panel, as well as the average cut score across the two panels, are provided to help state departments of education determine appropriate cut (or passing) scores.

- For Praxis Business Education, the average recommended cut score is **75** (on the raw score metric), which represents 62.5% of total available 120 raw score points (the recommended cut scores for Panels 1 and 2 are 74 and 76, respectively). The scaled score associated with a raw score of 75 on the Praxis Business Education assessment is 154.

Summary of Content Specification Judgments

Panelists judged the extent to which the knowledge and/or skills reflected by the Praxis Business Education assessment content specifications were important for entry-level Business Education teachers. All the knowledge/skills statements comprising the content specifications were judged to be *Very Important* or *Important* by a majority of the panelists, providing additional evidence that the content of the Praxis Business Education assessment is important for beginning practice.

Introduction

To support the decision-making process for state departments of education with regards to establishing passing scores, or cut scores, for the Praxis Business Education assessment, research staff from Educational Testing Service (ETS) designed and conducted two multi-state standard setting studies. The studies also collected content-related validity evidence to confirm the importance of the content specifications for entry-level Business Education teachers. The standard setting studies involved two expert panels, comprised of teachers, administrators, and college faculty. Panelists were recommended by departments of education of states that (a) currently use the Praxis Business Education assessment or (b) are considering use of the revised Praxis Business Education assessment as part of their licensure process.

The design of the multi-state standard setting studies included two, non-overlapping panels to (a) allow each participating state to be represented and (b) replicate the judgment process to strengthen the technical quality of the recommended passing score. (See Appendix A for the common agenda used for both panels.) Across the two panels, 19 states were represented by 40 panelists (see Figure 1).

Figure 1. Participating States (and number of panelists) for Business Education Panels

Connecticut (2 panelists)	New Jersey (3 panelists)
Hawaii (1 panelist)	Nevada (2 panelists)
Idaho (1 panelist)	Ohio (2 panelists)
Indiana (1 panelist)	Pennsylvania (2 panelists)
Kentucky (3 panelists)	South Carolina (1 panelist)
Louisiana (3 panelists)	Tennessee (3 panelists)
Maryland (2 panelists)	Utah (3 panelists)
Missouri (2 panelists)	Wisconsin (2 panelists)
North Carolina (3 panelists)	Wyoming (1 panelist)
North Dakota (3 panelists)	

NOTE: Hawaii, Idaho, Indiana, South Carolina, and Wyoming were represented on only one of the two panels.

The training provided to panelists as well as the study materials were consistent across panels with the exception of defining the “just qualified candidate.” To assure that both panels were using the same frame of reference when making question-level standard setting judgments, the “just qualified candidate” definition developed through a consensus process by the first panel was used as the definition for the second panel. The second panel did complete a thorough review of the definition to allow panelists to internalize the definition. The processes for developing the definition (with Panel 1) and reviewing/internalizing the definition (with Panel 2) are described later, and the “just qualified candidate” definition is presented in Appendix B.

The panels were convened in September 2009 in Princeton, New Jersey. The results for each panel and results combined across panels are summarized in the following report. The technical report containing the passing score recommendation for the Business Education assessment is provided to each of the represented state departments of education. In each state, the department of education, the state board of education, or a designated educator licensure board is responsible for establishing the final passing score in accordance with applicable state regulations.

The first national administration of the revised Praxis Business Education assessment will occur in fall 2010. The current Praxis Business Education assessment will be phased out, with the last national administration in summer 2010.

Praxis Business Education Assessment

The Praxis Business Education *Test at a Glance* document (ETS, in press) describes the purpose and structure of the assessment. In brief, the assessment measures whether entry-level Business Education teachers have the knowledge and/or skills believed necessary for competent professional practice. A National Advisory Committee of Business Education teachers and college faculty defined the content of the assessment, and a national survey of teachers and teacher educators confirmed the content.

The two hour assessment contains 120 multiple-choice questions and covers *Accounting and Finance* (18 questions); *Communication and Career Development* (18 questions); *Economics* (12 questions); *Entrepreneurship* (12 questions); *Information Technology* (18 questions); *Law and International Business* (18 questions); *Marketing and Management* (12 questions); and *Professional Business Education* (12 questions). Candidates' overall scores as well as eight category scores are reported. The maximum total number of raw-score points that may be earned is 120. The reporting scale for the Praxis Business Education assessment ranges from 100 to 200 scaled-score points.

Expert Panels

The standard setting studies for Praxis Business Education included two expert panels. The various state departments of education recruited panelists to represent a range of professional perspectives. A description of the panels is presented below. (See Appendix C for a listing of panelists for each panel.)

Panel 1 included 21 teachers, administrators, and college faculty who prepare Business Education teachers, representing 17 states. In brief, 13 panelists were teachers, three were administrators and five were college faculty. Fifteen panelists were White, four were African American, one was Asian American, and one was Alaskan Native/American Indian. Thirteen panelists were female. Nineteen panelists reported being certified

Business Education teachers in their states. Almost half of the panelists had 16 or more years of experience as a Business Education teacher, and approximately a quarter had 7 or fewer years of teaching experience.

Panel 2 included 19 teachers and college faculty, representing 16 states. In brief, 17 panelists were teachers and two were college faculty. Fifteen panelists were White, three were African American, and one was Hispanic. Thirteen panelists were female. Approximately half of the panelists had 7 or fewer years of experience as a Business Education teacher, and approximately 20 percent had 12 or more years of teaching experience.

A fuller demographic description for the members of the two panels is presented in Tables 1a and 1b in Appendix D.

Process and Method

The design of the Praxis Business Education assessment standard setting studies included two non-overlapping expert panels. As described below, the training provided to panelists and study materials were consistent across panels. Any differences between panels (e.g., defining the “just qualified candidate”) are highlighted.

The panelists were sent an e-mail explaining the purpose of the standard-setting study and requesting that they review the test content specifications for the Praxis Business Education assessment (included in the Praxis Business Education *Test at a Glance*, which was attached to the e-mail). The purpose of the review was to familiarize the panelists with the general structure and content of the assessment.

The standard-setting studies began with a welcome and introduction by Drs. Wanda Swiggett and Clyde Reese, ETS researchers in the Center for Validity Research. Dr. Swiggett, lead facilitator for the studies, then explained how the Praxis Business Education assessment was developed, provided an overview of standard setting, and presented the agenda for the study.

Reviewing the Praxis Business Education Assessment

The first activity was for the panelists to “take the test.” (Each panelist had signed a nondisclosure form.) The panelists were given approximately an hour and a half to respond to the multiple-choice questions. The purpose of “taking the test” was for the panelists to become familiar with the test format, content, and difficulty. After “taking the test,” the panelists checked their responses against the answer key for the questions.

The panelists then engaged in a discussion of the major content areas being addressed by the assessment; they were also asked to remark on any content areas that they thought would be particularly challenging for entering Business Education teachers, and areas that addressed content that would be particularly important for entering teachers.

Defining the JQC

Following the review of the assessment, panelists internalized the definition of the Just Qualified Candidate (JQC). The JQC is the test taker who has the minimum level of knowledge and/or skills believed necessary to be a qualified Business Education teacher. The JQC definition is the operational definition of the cut score. The goal of the standard-setting process is to identify the test score that aligns with this definition of the JQC.

In Panel 1, the panelists were split into smaller groups, and each group was asked to write down their definition of a JQC. The groups began with a draft definition developed for a previous study; however, panelists were encouraged to revise the draft definition by adding, deleting or revising statements. Each group referred to Praxis Business Education *Test at a Glance* to guide their definition. Each group posted its definition on chart paper, and a full-panel discussion occurred to reach consensus on a final definition (Appendix B).

In Panel 2, the panelists began with the definition of the JQC developed by the first panel. Given that the multi-state standard setting study was designed to replicate processes and procedures across the two panels, it was important that both panels use the same JQC definition to frame their judgments. For Panel 2, the panelists reviewed the JQC definition, and any ambiguities were discussed and clarified. The panelists then were split into smaller groups, and each group discussed the behaviors they would expect of the JQC based on the definition and developed performance indicators or “can do” statements based on the definition. The performance indicators were shared across groups and discussed. The purpose of the exercise was to have the panelists internalize the definition.

Panelists’ Judgments

The standard-setting process for the Praxis Business Education assessment is described next, followed by the results from the standard-setting studies. The recommended cut scores for each panel, as well as the average cut score across the two panels, are provided to help state departments of education determine appropriate cut (or passing) scores.

A probability-based Angoff method (Brandon, 2004; Hambleton & Pitoniak, 2006) was used for the Praxis Business Education. In this approach, for each multiple-choice question, a panelist decides on the likelihood (probability or chance) that a JQC would answer it correctly. Panelists made their judgments using the following rating scale: 0, .05, .10, .20, .30, .40, .50, .60, .70, .80, .90, .95, 1. The lower the value, the less likely it is that a JQC would answer the question correctly, because the question is difficult for the JQC. The higher the value, the more likely it is that a JQC would answer the question correctly.

For each panel, the panelists were asked to approach the judgment process in two stages. First, they reviewed the definition of the JQC and the question and decided if, overall, the question was difficult for the JQC, easy for

the JQC, or moderately difficult/easy. The facilitator encouraged the panelists to consider the following rule of thumb to guide their decision:

- difficult questions for a JQC were in the 0 to .30 range;
- easy questions for a JQC were in the .70 to 1 range; and
- moderately difficult/easy questions for a JQC were in the .40 to .60 range.

The second decision was for panelists to decide how they wanted to refine their judgment within the range. For example, if a panelist thought that a question was easy for a JQC, the initial decision located the question in the .70 to 1 range. The second decision was for the panelist to decide if the likelihood of answering it correctly was .70, .80, .90, .95, or 1.0. The two-stage decision-process was implemented to reduce the cognitive load placed on the panelists. The panelists practiced making their standard-setting judgments on the first ten questions.

The panelists engaged in two rounds of judgments. Following Round 1, feedback was provided to the panel, including each panelist's (listed by ID number) recommended cut score and the panel's average recommended cut score, highest and lowest cut score, and standard deviation. Following discussion, the panelists' judgments were displayed for each question. The panelists' judgments were summarized by the three general difficulty levels (0 to .30, .40 to .60, and .70 to 1), and the panel's average question judgment was provided. Questions were highlighted to show when panelists converged in their judgments (approximately two-thirds of the panelists located a question in the same difficulty range) or diverged in their judgments. Panelists were asked to share their rationales for the judgments they made. Following this discussion, panelists were provided an opportunity to change their question-level standard-setting judgments (Round 2).

Other than the definition of the JQC, results from Panel 1 were not shared with the second panel. The question-level judgments and resulting discussions for Panel 2 were independent of judgments and discussions that occurred with Panel 1.

Judgment of Praxis Business Education Content Specifications

In addition to the two-round standard setting process, each panel judged the importance of the knowledge and/or skills stated or implied in the assessment content specifications for the job of an entry-level Business Education teacher. These judgments addressed the perceived content-based validity of the assessment. Judgments were made using a four-point Likert scale — *Very Important*, *Important*, *Slightly Important*, and *Not Important*. Each panelist independently judged the eight knowledge categories and 32 knowledge/skills statements. (See Appendix E for the content specifications for the Praxis Business Education assessment.)

Results

Initial Evaluation Forms

The panelists completed an initial evaluation after receiving training on how to make question-level judgments. The primary information collected from this form was the panelists indicating if they had received adequate training to make their standard-setting judgments and were ready to proceed. Across both panels, all panelists indicated that they were prepared to make their judgments.

Summary of Standard Setting Judgments by Round

A summary of each round of standard-setting judgments is presented in Appendix D. The numbers in each table reflect the recommended cut scores — the number of raw-score points needed to “pass” the test — of each panelist for the two rounds. The panels’ average recommended cut score and highest and lowest cut scores are reported, as are the standard deviations (SD) of panelists’ cut scores and the standard errors of judgment (SEJ). The SEJ is one way of estimating the reliability of the judgments. It indicates how likely it would be for other panels of educators similar in make-up, experience, and standard-setting training to the current panels to recommend the same cut score on the same form of the assessment. A comparable panel’s cut score would be within 1 SEJ of the current average cut score 68 percent of the time and within 2 SEJs 95 percent of the time.

Round 1 judgments are made without discussion among the panelists. The most variability in judgments, therefore, is typically present in the first round. Round 2 judgments, however, are informed by panel discussion; thus, it is common to see a decrease both in the standard deviation and SEJ. This decrease — indicating convergence among the panelists’ judgments — was observed for both panels. The Round 2 average score is the panel’s recommended cut score (passing score).

The panels’ cut score recommendations for the Praxis Business Education assessment are 73.15 for Panel 1 and 75.03 for Panel 2 (see Tables 2a and 2b). The values were rounded to the next highest whole number to determine the functional recommended cut scores — 74 for Panel 1 and 76 for Panel 2. The values of 74 and 76 represent approximately 62% and 63%, respectively, of the total available 120 raw-score points that could be earned on the assessment. The scaled scores associated with 74 and 76 raw points are 152 and 155, respectively.¹

Tables 3a and 3b present the estimated standard errors of measurement (SEM) around the recommended cut scores for each panel. A standard error represents the uncertainty associated with a test score. The scaled scores associated with 1 and 2 SEMs above and below the recommended cut scores are provided. The standard errors provided are an estimate, given that the Praxis Business Education assessment has not yet been administered.

¹ For reference purposes, if the recommended raw cut score were 73 or 75 points, the scaled score would be 151 or 154, respectively.

In addition to the recommended cut scores for each panel, the average cut across the two panels is provided to help state departments of education determine an appropriate cut (or passing) score for the Praxis Business Education assessment. The panels' average cut score recommendation for the Praxis Business Education assessment is 74.09. The value was rounded to 75 (next highest raw score) to determine the functional recommended cut score. The value of 75 represents approximately 62.5% of the total available 120 raw-score points that could be earned on the assessment. The scaled score associated with 75 raw points is 154.² Table 3c presents the standard error of measurement (SEM) around the recommended cut score combining the information from the two panels.

Summary of Content Specification Judgments

Panelists judged the extent to which the knowledge and/or skills reflected by the Praxis Business Education assessment content specifications were important for entry-level Business Education teachers. Panelists rated the eight knowledge categories and 32 knowledge/skills statements on a four-point scale ranging from *Very Important* to *Not Important*. The panelists' ratings are summarized in Table 4 (in Appendix D).

All but one of the eight knowledge categories – *Professional Business Education* – was judged to be *Very Important* or *Important* by 90% or more of the panelists. The *Professional Business Education* category was judged as *Very Important* or *Important* by a majority of panelists (78%). The knowledge categories of *Accounting and Finance* (83% of panelists judged as *Very Important*) and *Information Technology* (78% of panelists judged as *Very Important*) were seen as most important for beginning Business Education teachers. The knowledge categories of *Professional Business Education* (23% of panelists judged as *Very Important*) and *Economics* (25% of panelists judged as *Very Important*) were seen as least important.

Summary of Final Evaluations

The panelists completed an evaluation form at the conclusion of their standard setting study. The evaluation form asked the panelists to provide feedback about the quality of the standard-setting implementation and the factors that influenced their decisions. Tables 5a and 5b (in Appendix D) present the results of the final evaluations.

All panelists *agreed* or *strongly agreed* that they understood the purpose of the study, that the facilitators' instructions and explanations were clear, and that they were prepared to make their standard setting judgments. Across the two panels, more than two-thirds of the panels *strongly agreed* that the standard-setting process was easy to follow. The panelists reported that the definition of the JQC most influenced their standard-setting judgments. All the panelists except one (on Panel 2) reported that between-round discussions was at least *somewhat influential* in guiding their judgments and all panelists reported their own professional experience was

² For reference purposes, if the recommended raw cut score was 74 points, the scaled score would be 152.

at least *somewhat influential*. More than a quarter of the panelists (across the two panels) indicated that the cut scores of other panelists did not influence their judgments.

There were some minor differences between the two panels when asked to respond to their level of comfort with their panel's recommended passing score. Across both panels, only one panelist (on Panel 1) indicated that he/she was *somewhat uncomfortable* with the recommended cut score; all other panelists indicated they were *very* or *somewhat comfortable* with their recommendation. However, seven panelists (or 33% of the panel) from Panel 1 reported being *somewhat comfortable* with their panel's recommended passing score compared to four panelists (or 21% of the panel) from Panel 2. For both panels, approximately 80% of the panelists indicated that the recommend cut score was *about right* and the remaining panelists indicating the cut score was *too low*.

Summary

To support the decision-making process for state departments of education with regards to establishing passing scores, or cut scores, for the Praxis Business Education assessment, research staff from Educational Testing Service (ETS) designed and conducted two multi-state standard setting studies. The studies also collected content-related validity evidence to confirm the importance of the content specifications for entry-level Business Education teachers. The standard setting studies involved two expert panels, comprised of teachers, administrators, and college faculty.

Standard setting was conducted using a probability-based Angoff approach. The recommended cut scores for each panel, as well as the average cut score across the two panels, are provided. The average recommended cut score across the two panels is **75** (on the raw score metric), which represents 62.5% of total available 120 raw-score points (the recommended cut scores for Panels 1 and 2 are 74 and 76, respectively). The scaled score associated with a raw score of 75 on the Praxis Business Education assessment is 154.

Both panels confirmed that the knowledge and/or skills stated or implied in the Praxis Business Education assessment content specifications were important for entry-level teachers. The results of the evaluation surveys (initial and final) from each panel support the quality of the standard-setting implementation.

References

- Brandon, P.R. (2004). Conclusions about frequently studied modified Angoff standard-setting topics. *Applied Measurement in Education*, 17, 59-88.
- Educational Testing Service. (in press). *Business Education: Content Knowledge: Test at a glance*. Princeton, NJ: Author.
- Hambleton, R. K., & Pitoniak, M.J. (2006). Setting performance standards. In R. L. Brennan (Ed.), *Educational Measurement* (4 ed., pp. 433-470). Westport, CT: American Council on Education/Praeger.

APPENDIX A
Workshop Agenda

AGENDA

Praxis Business Education Assessment

Standard Setting Study

Day 1

9:00 – 9:15	Welcome and Introduction
9:15 – 9:45	Overview of Standard Setting & Workshop Events
9:45 – 9:55	Overview of the Praxis Business Education Assessment
9:55 – 10:00	Break
10:00 – 11:30	“Take” the Praxis Business Education Assessment
11:30 – 12:00	Discuss the Praxis Business Education Assessment
12:00 – 1:00	Lunch
1:00 – 2:55	Define the Knowledge/Skills of a JQC
2:55 – 3:00	Break
3:00 – 3:30	Standard Setting Training
3:30 – 5:00	Round 1 Standard Setting Judgments for Questions 1-60
5:00 – 5:15	Collect Materials; End of Day 1

AGENDA

Praxis Business Education Assessment

Standard Setting Study

Day 2

9:00 – 9:15	Overview of Day 2
9:15 – 9:30	Review Standard Setting Process
9:30 – 11:00	Round 1 Standard Setting Judgments for Questions 61-120
11:00 – 11:15	Break
11:15 – 12:00	Round 1 Feedback & Round 2 Judgments
12:00 – 1:00	Lunch
1:00 – 2:30	Round 1 Feedback & Round 2 Judgments (continued)
2:30 – 2:45	Break
2:45 – 3:15	Specification Judgments
3:15 – 3:30	Feedback on Round 2 Recommended Cut Score
3:30 – 3:45	Complete Final Evaluation
3:45 – 4:00	Collect Materials; End of Study

APPENDIX B
Just Qualified Candidate (JQC) Definition

Definition of the Just Qualified Candidate – Business Education

The Just Qualified Candidate has...

1. Competence in basic business mathematical calculations
2. Competence in verbal (oral and written), non-verbal, visual, and electronic communication
3. Knowledge of appropriate student and professional organizations
4. A basic understanding of the accounting cycle and principles
5. An understanding of real-world application of economic principles
6. An understanding of personal financial literacy
7. An understanding of business ownership and entrepreneurship
8. An understanding of the functions of management, including human relations
9. A working knowledge of computer and emerging technologies
10. An understanding of ethics and legal issues affecting business practices
11. An understanding of the role and impact of global business
12. An understanding of work-based learning and career development
13. An understanding of basic marketing principles

APPENDIX C
Panelists' Names & Affiliations

Business Education Panel 1

Panelist

Shay W. Bonnell
 Lloyd Brooks
 Donna L. Cellante
 Alan Douglas
 Pamela Flynn
 Keri L. Fonder
 Brian M. Fuschetto
 Holly Handy
 Kimberly M. Jackson
 Thomas K. Y. Kam
 Christine Kerollis
 Brenda P. Line
 Emily McLendon
 Kimberly F. Moody
 Lynne Palleria-Greatorex
 Jeffrey P. Rerick
 Elizabeth Roberson
 John Stalcup
 Debbie Stanislawski
 Johnny R. Stribling

Affiliation

Peru High School (IN)
 University of Memphis (TN)
 Robert Morris University (PA)
 Rockhurst University (MO)
 Broome High School (SC)
 Dakota Memorial School (ND)
 Lyndhurst High School (NJ)
 Davis School District (UT)
 Montgomery County Public Schools (MD)
 Hawaii Pacific University (HI)
 Rancocas Valley Regional High School (NJ)
 Hart County High School (KY)
 Warren Easton Charter High School (LA)
 Clarks County School District (NV)
 Wilby High School (CT)
 Grafton Public Schools #3 (ND)
 Whiteville City Schools (NC)
 Stebbins High School (OH)
 University of Wisconsin – Stout (WI)
 Butler Traditional High School (KY)

*One panelist did not wish to be listed in the technical report.

Business Education Panel 2

Panelist

Robert H. Anderson
Susan Baldwin
Rebecca Brady
Stacy Byrne
Ben Cueto
Carolyn E. Cusick
Michelle Dahlberg
Tanya R. Gabrielson
Margaret R. Goodwin
Sally Hackman
Justin L. Johnson
Gregory J. Lippe
Kimberly Mayea
Shafarro G. Moore
Christine A. Naquin
Ruth E. Page
Stephanie Paris-Cooper
Jessica Schneider
Alden A. Talbot

Affiliation

Fordville Lankin Public School (ND)
Coffee County Central High School (TN)
Walker Valley High School (TN)
East Career and Technical Academy (NV)
Hoboken Board of Education (NJ)
Upper St. Clair School District (PA)
Buffalo High School (WY)
Centennial High School (ID)
Hopewell High School (NC)
Central Methodist University (MO)
Washington Local Schools (OH)
Whitefish Bay School District (WI)
Berwick High School (LA)
Waggener Traditional High School (KY)
Berwick High School (LA)
Davie County High School (NC)
New Haven Board of Education (CT)
North East High School (MD)
Weber State University (UT)

APPENDIX D
Results for Praxis Business Education

Table 1a Panel Member Demographics — Business Education (Panel 1)

	N	Percent
Group you are representing		
Teachers	13	62%
Administrator/Department Head	3	14%
College Faculty	5	24%
Other	0	0%
Race		
African American or Black	4	19%
Alaskan Native or American Indian	1	5%
Asian or Asian American	1	5%
Native Hawaiian or Other Pacific Islander	0	0%
White	15	71%
Hispanic	0	0%
Gender		
Female	13	62%
Male	8	38%
Are you certified as a Business Education teacher in your state?		
No	2	10%
Yes	19	90%
Are you currently teaching Business Education in your state?		
No	5	24%
Yes	16	76%
Are you currently mentoring another Business Education teacher?		
No	11	52%
Yes	10	48%
How many years of experience do you have as a Business Education teacher?		
3 years or less	2	10%
4 - 7 years	3	14%
8 - 11 years	4	19%
12 - 15 years	3	14%
16 years or more	9	43%
For which education level are you currently teaching Business Education?		
Elementary (K - 5 or K - 6)	0	0%
Middle School (6 - 8 or 7 - 9)	1	5%
High School (9 - 12 or 10 - 12)	13	62%
All Grades (K - 12)	1	5%
Higher Education	5	24%
Other	1	5%
School Setting		
Urban	6	29%
Suburban	11	52%
Rural	4	19%

Table 1b Panel Member Demographics — Business Education (Panel 2)

	N	Percent
Group you are representing		
Teachers	17	89%
Administrator/Department Head	0	0%
College Faculty	2	11%
Other	0	0%
Race		
African American or Black	3	16%
Alaskan Native or American Indian	0	0%
Asian or Asian American	0	0%
Native Hawaiian or Other Pacific Islander	0	0%
White	15	79%
Hispanic	1	5%
Gender		
Female	13	68%
Male	6	32%
Are you certified as a Business Education teacher in your state?		
No	0	0%
Yes	19	100%
Are you currently teaching Business Education in your state?		
No	1	5%
Yes	18	95%
Are you currently mentoring another Business Education teacher?		
No	15	79%
Yes	4	21%
How many years of experience do you have as a Business Education teacher?		
3 years or less	1	5%
4 - 7 years	9	47%
8 - 11 years	5	26%
12 - 15 years	1	5%
16 years or more	3	16%
For which education level are you currently teaching Business Education?		
Elementary (K - 5 or K - 6)	0	0%
Middle School (6 - 8 or 7 - 9)	1	5%
High School (9 - 12 or 10 - 12)	15	79%
All Grades (K - 12)	1	5%
Higher Education	2	11%
Other	0	0%
School Setting		
Urban	6	32%
Suburban	5	26%
Rural	8	42%

Table 2a Cut score Summary by Round of Judgments — Business Education (Panel 1)

Panelist	Round 1	Round 2
1	71.50	81.20
2	79.10	78.80
3	81.20	78.15
4	80.60	77.95
5	71.00	69.20
6	74.30	71.40
7	69.15	67.85
8	58.65	58.65
9	77.30	77.70
10	82.85	75.45
11	70.65	70.10
12	70.75	71.35
13	76.50	74.50
14	81.60	81.30
15	79.40	78.20
16	93.50	78.90
17	81.90	79.50
18	65.70	67.70
19	72.35	72.35
20	51.35	56.25
21	67.95	69.65
Average	74.16	73.15
Lowest	51.35	56.25
Highest	93.50	81.30
SD	9.12	6.84
SEJ	1.99	1.49

Table 2b Cut score Summary by Round of Judgments — Business Education (Panel 2)

Panelist	Round 1	Round 2
1	64.25	65.45
2	80.80	80.90
3	81.75	81.35
4	77.25	78.60
5	86.45	85.75
6	90.60	89.00
7	66.20	65.90
8	71.30	71.40
9	60.50	60.45
10	80.15	80.15
11	71.75	71.55
12	63.65	72.15
13	81.95	81.05
14	90.25	90.25
15	62.40	61.40
16	61.70	60.10
17	77.95	77.65
18	71.80	71.80
19	80.70	80.70
Average	74.81	75.03
Lowest	60.50	60.10
Highest	90.60	90.25
SD	9.74	9.34
SEJ	2.24	2.14

Table 3a Cut scores ± 1 and 2 SEMs of the Recommended Cut score — Business Education (Panel 1)

Recommended Cut score (SEM)		Scale Score Equivalent
74 (5.35)		152
- 2 SEMs	64	140
-1 SEM	69	146
+1 SEM	80	160
+ 2 SEMs	85	165

Table 3b Cut scores ± 1 and 2 SEMs of the Recommended Cut score — Business Education (Panel 2)

Recommended Cut score (SEM)		Scale Score Equivalent
76 (5.30)		155
- 2 SEMs	66	143
-1 SEM	71	149
+1 SEM	82	162
+ 2 SEMs	87	168

Table 3c Cut scores ± 1 and 2 SEMs of the Recommended Cut score — Business Education (Combined))

Recommended Cut score (SEM)		Scale Score Equivalent
75 (5.33)		154
- 2 SEMs	65	142
-1 SEM	70	148
+1 SEM	81	161
+ 2 SEMs	86	167

Note: Consistent with the recommended cut score, the cut scores at the different SEMs have been rounded to the next highest whole number.

Table 4 Specification Judgments — Business Education (Combined Panels)

	Very Important		Important		Slightly Important		Not Important	
	N	%	N	%	N	%	N	%
I. Accounting and Finance	33	83%	7	18%	0	0%	0	0%
• Accounting	20	50%	19	48%	1	3%	0	0%
• Personal & Business Finance	36	90%	4	10%	0	0%	0	0%
II. Communication & Career Development	27	68%	12	30%	1	3%	0	0%
• Foundations of Communication	14	35%	23	58%	2	5%	1	3%
• Written & Oral Communications	28	70%	11	28%	1	3%	0	0%
• Employment Communication	28	70%	10	25%	2	5%	0	0%
• Career Research	16	40%	23	58%	1	3%	0	0%
III. Economics	10	25%	29	73%	1	3%	0	0%
• Allocation of Resources	16	40%	20	50%	4	10%	0	0%
• Economic Systems	13	33%	23	58%	4	10%	0	0%
• Market Structures	8	20%	27	68%	5	13%	0	0%
• Role of Government	8	20%	29	73%	3	8%	0	0%
• Economic Indicators	13	33%	25	63%	2	5%	0	0%
IV. Entrepreneurship	15	38%	23	58%	2	5%	0	0%
• Characteristics	10	25%	28	70%	2	5%	0	0%
• Entrepreneurial opportunities	7	18%	27	68%	6	15%	0	0%
• Forms of ownership	29	73%	10	25%	1	3%	0	0%
• Business Plans	11	28%	23	58%	6	15%	0	0%
V. Information Technology	31	78%	9	23%	0	0%	0	0%
• Operations and concepts	29	73%	10	25%	1	3%	0	0%
• Human factors	9	23%	21	53%	10	25%	0	0%
• Technology Tools	34	85%	6	15%	0	0%	0	0%
VI. Law and International Business	13	33%	23	58%	4	10%	0	0%
• Foundations of International Business	8	20%	23	58%	9	23%	0	0%
• International Business Environment	9	23%	21	53%	10	25%	0	0%
• Trade Relations	8	20%	21	53%	11	28%	0	0%
• Contract law	18	45%	15	38%	7	18%	0	0%
• Consumer law	22	55%	15	38%	3	8%	0	0%
• Computer law	21	53%	15	38%	4	10%	0	0%
• United States court system	10	25%	19	48%	11	28%	0	0%
VII. Marketing and Management	13	33%	26	65%	1	3%	0	0%
• Marketing	13	33%	25	63%	2	5%	0	0%
• Management	14	35%	25	63%	1	3%	0	0%
VIII. Professional Business Education	9	23%	22	55%	9	23%	0	0%
• Prof. Business Education Organizations	7	18%	23	58%	10	25%	0	0%
• Career & Technical Education Legislation	5	13%	23	58%	12	30%	0	0%
• School & Community Relationships	11	28%	18	45%	11	28%	0	0%
• Mission & Objectives of the Business Education	17	43%	15	38%	8	20%	0	0%
• Work-based Learning	14	35%	16	40%	10	25%	0	0%

Table 5a Final Evaluation — Business Education (Panel 1)

	Strongly Agree		Agree		Disagree		Strongly Disagree	
	N	%	N	%	N	%	N	%
I understood the purpose of this study.	20	95%	1	5%	0	0%	0	0%
The instructions and explanations provided by the facilitator were clear.	19	90%	2	10%	0	0%	0	0%
The training in the standard setting methods was adequate to give me the information I needed to complete my assignment.	19	90%	2	10%	0	0%	0	0%
The explanation of how the recommended cut scores are computed was clear.	12	57%	8	38%	1	5%	0	0%
The opportunity for feedback and discussion between rounds was helpful.	18	86%	3	14%	0	0%	0	0%
The process of making the standard setting judgments was easy to follow.	15	71%	6	29%	0	0%	0	0%
	Very Influential		Somewhat Influential		Not Influential			
How influential was each of the following factors in guiding your standard setting judgments?	N	%	N	%	N	%		
The definition of the Just Qualified Candidate	17	81%	4	19%	0	0%		
The between-round discussions	13	62%	8	38%	0	0%		
The cut scores of other panel members	4	19%	12	57%	5	24%		
My own professional experience	16	76%	5	24%	0	0%		
	Very Comfortable		Somewhat Comfortable		Somewhat Uncomfortable		Very Uncomfortable	
	N	%	N	%	N	%	N	%
Overall, how comfortable are you with the panel's recommended cut scores?	13	62%	7	33%	1	5%	0	0%
	Too Low		About Right		Too High			
	N	%	N	%	N	%		
Overall, the panel's recommended cut score for the Business Education test is:	4	19%	17	81%	0	0%		

Table 5b Final Evaluation — Business Education (Panel 2)

	Strongly Agree		Agree		Disagree		Strongly Disagree	
	N	%	N	%	N	%	N	%
I understood the purpose of this study.	15	79%	4	21%	0	0%	0	0%
The instructions and explanations provided by the facilitator were clear.	16	84%	3	16%	0	0%	0	0%
The training in the standard setting methods was adequate to give me the information I needed to complete my assignment.	18	95%	1	5%	0	0%	0	0%
The explanation of how the recommended cut scores are computed was clear.	13	68%	5	26%	0	0%	0	0%
The opportunity for feedback and discussion between rounds was helpful.	16	84%	3	16%	0	0%	0	0%
The process of making the standard setting judgments was easy to follow.	16	84%	3	16%	0	0%	0	0%
	Very Influential		Somewhat Influential		Not Influential			
How influential was each of the following factors in guiding your standard setting judgments?	N	%	N	%	N	%		
The definition of the Just Qualified Candidate	17	89%	2	11%	0	0%		
The between-round discussions	9	47%	9	47%	1	5%		
The cut scores of other panel members	3	16%	10	53%	6	32%		
My own professional experience	10	53%	9	47%	0	0%		
	Very Comfortable		Somewhat Comfortable		Somewhat Uncomfortable		Very Uncomfortable	
	N	%	N	%	N	%	N	%
Overall, how comfortable are you with the panel's recommended cut scores?	15	79%	4	21%	0	0%	0	0%
	Too Low		About Right		Too High			
	N	%	N	%	N	%		
Overall, the panel's recommended cut score for the Business Education test is:	3	16%	16	84%	0	0%		

APPENDIX E
Praxis Business Education Content Specifications

I. Accounting and Finance

- Accounting: the accounting cycle, the accounting process and the interpretation and use of financial statements
- Personal and Business Finance: savings and investments, managing: credit, finances, and risks; financial institutions

II. Communication and Career Development

- Foundations of Communication: barriers, techniques, and skills
- Written and Oral Communications: letters, memos, email, presentations, reports
- Employment Communication: resumes, applications, interview techniques and tools
- Career Research: evaluating occupational interests and using career research tools and resources

III. Economics

- Allocation of Resources: supply and demand, opportunity cost, scarcity, factors of production, etc.
- Economic Systems: free enterprise, market vs. command economies, mixed economies
- Market Structures: monopolies, oligopolies, competition, the effect of the structures on pricing and the quality of goods and services
- Role of Government: fiscal policies, taxation; monetary policies, banking regulations
- Economic Indicators: growth, productivity, employment, the business cycle

IV. Entrepreneurship

- Characteristics
- Entrepreneurial opportunities
- Forms of ownership: sole proprietorship, partnership, corporation
- Business Plans: components and rationale

V. Information Technology

- Operations and concepts: hardware, software, networking, operating environments, file management, security
- Human factors: ergonomics, workflow, physical design/layout
- Technology Tools:
 - Communication (e.g., telecommunications, Internet, netiquette)
 - Research (e.g., Internet usage, search strategies, databases)
 - Problem-solving and decision-making using applications (e.g., word processing, multimedia, spreadsheet, database, desktop publishing, web design, programming, collaborative software)

VI. Law and International Business

- Foundations of International Business: role and impact
- International Business Environment: social, cultural, political, legal, and economic factors; and the impact of a country's infrastructure
- Trade Relations: imports and exports; trade barriers, trade agreements and balance of trade
- Contract law
- Consumer law
- Computer law: copyright, intellectual property, privacy/security
- United States court system

VII. Marketing and Management

- Marketing: marketing principles, marketing mix and consumer behavior
- Management: management functions and human resources

VIII. Professional Business Education

- Professional Business Education Organizations
 - Student organizations and the role of the advisor
 - Teacher organizations and the importance of staying actively involved in the profession
- Career and Technical Education Legislation (e.g. Carl Perkins)
- School and Community Relationships
 - Advisory committees
 - Student recruitment
 - Involvement of business community
- Mission and Objectives of the Business Education Program
- Work-based Learning
 - School-based enterprises
 - Internships
 - Mentorship
 - Cooperative education
 - Job shadowing